

REMARKS

Upon entry of the present amendment, claims 1-22 will remain pending in the above-identified application and stand ready for further action on the merits, and remaining claims 7-19 being withdrawn from consideration based on an earlier restriction requirement of the Examiner by telephone. Claims 1 and 5 have been amended. New claims 20-22 have been added.

The instant amendment made herein to the claims does not incorporate new matter into the application as originally filed. For example, the range " $45^{\circ} \leq \alpha \leq 90^{\circ}$ " in claim 1 is supported by the disclosure at page 6, lines 6-13 of the specification. New claims 20 and 21 are added based on original claim 1, respectively. Support for new claim 22 is found in Figures 2a and 2c of the present application.

Accordingly, proper consideration of each of the pending claims is respectfully requested at present, as is entry of the present amendment.

Restriction/Election

It is affirmed that for the purpose of examination of the present application, Applicants elect, with traverse, Group I, Claims 1-6. The requirement is traversed because there would be no undue burden on the Examiner to examine the two groups of the claims. Applicants respectfully request that the claims 7-19 be rejoined.

Claim Rejections under 35 USC § 102 (e) and § 103 (a)

At pages 3-6 of the outstanding Office Action, claims 1-5 have been rejected under 35 U.S.C. § 102(e) as being anticipated by Clark U.S. '470 (U.S. Patent Publication No. 2002/0142470). Further, claim 6 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Clark U.S. '470 in view of Sundberg U.S. '825 (U.S. Patent No. 6,086,825).

Applicants respectfully traverse and request that the Examiner withdraw the rejections based on the following considerations.

Distinctions over the Cited References and Non-Obvious over the Combination thereof

In the background art, most microfluidic structures are arrayed to lie within a rotary plane along the edge of a rotary disc so that an outward fluid flow is incurred in microfluidic structures by spinning a disc.

The present invention relates to a different type of a microfluidic arrangement. Namely, for example, in the present invention, microfluidic structures are arrayed in parallel, in a layer I, in a separate microfluidic device, and the arrangement further comprises a rotary member provided with seats for holding a plurality of such microfluidic devices at the claimed angle α relative to a spin plane (*i.e.*, $45^\circ \leq \alpha \leq 90^\circ$) (see claim 1 herein). Thus, the microfluidic structures are arrayed at an angle relative to the spin plane, rather than in a level with the spin plane. A larger number of microfluidic structures can be processed simultaneously, since the length of a device may be longer than the distance between adjacent seats, providing more space for additional microfluidic structures.

On the other hand, none of the cited references discloses or suggests such technical features of the present invention. For example, the primary reference Clark U.S. '470 merely discloses a rotary member having an axis of rotation and an off-axis spherical ball, from which one quarter of a body of the ball is removed so as to provide a flat surface for holding a plate having channels (see Fig. 5B of Clark U.S. '470). The ball may be rotated along two different axes so that the plate with channels can be oriented in any possible direction. A fluid flow is then induced in the channels by rotating the rotary member. Since the ball and the flat surface may be oriented in any direction, the Clark U.S. '470 reference fails to disclose or suggest the claimed angle as recited in claim 1 (*i.e.*, $45^\circ \leq \alpha \leq 90^\circ$) and thus the rejection for anticipation has been overcome.

Further, the spherical balls of Clark U.S. '470 are much larger than the plate held by the flat surface and there is a rotary member for rotating the balls which is adjacent to the balls. The number of balls depends on the size of the rotary member and may be any number. However, the width occupied by the ball on the rotary member always is larger than the length of the microfluidic device held by the ball. Hence, there is no space-saving effect due to employment of the ball, and thereby the number of microfluidic structures will actually decrease. Thus, according to the structure of Clark U.S. '470, it is impossible to increase the number of microfluidic structures, which allows a plurality of sample to be processed simultaneously.

Similarly, the secondary reference Sundberg U.S. '825 also fails to disclose or suggest such features of the present invention.

Therefore, the present invention is clearly distinguished from each of the cited references. Further, there is no reasonable expectation of success and/or rationale for one skilled in the art to

arrive at the present invention based on the combination of the primary reference Clark U.S. '470 with the secondary reference Sundberg U.S. '825. Thus, the present invention is neither anticipated by Clark U.S. '470 nor obvious over Clark U.S. '470 in view of Sundberg U.S. '825.

Based on the foregoing explanation, Applicants respectfully request that the Examiner withdraw the rejections.

CONCLUSION

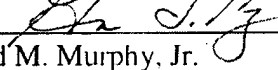
Based upon the amendments and remarks presented herein, the Examiner is respectfully requested to issue a Notice of Allowance clearly indicating that each of the pending claims are allowed.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Toyohiko Konno (Reg. No. L0053) at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By  ~~28,977~~
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